EXHIBIT 3
DATE 3-30-07
SB 218

SUPPORT SB 218
GEOLOGIC SEQUESTRATION STANDARDS FOR CARBON DIOXIDE

WHAT IS GEOLOGIC SEQUESTRATION OF CARBON DIOXIDE (CO2)?

It is the storage of CO2 in a geologic formation through the injection of CO2 into an underground formation that has the capability to contain it securely over a long period of time.[1] It is poised to become the key technology option for greenhouse gas emissions abatement.[2]

For well-selected, designed and managed geological storage sites, the vast majority of the CO2 will gradually be immobilized by various trapping mechanisms and, in that case, could be retained for up to millions of years.[3]

WHY REQUIRE STANDARDS?

"Conservation, renewable energy, and improvements in the efficiency of power plants, automobiles, appliances, etc. are important first steps in any GHG (greenhouse gas) emissions mitigation efforts. But those approaches cannot deliver the level of emissions reduction needed to stabilize the concentration of GHGs in the atmosphere...."[4]

Injection Hazards:

- Fractured formations, fault and seismic activity – these could provide an avenue for CO2 leakage. Pressure build-up caused by CO2 injection could trigger small seismic events.[5]
- Portland cement caps can deteriorate when exposed to carbonic acid, which can form when CO2 interacts with saline formations. Wells and plugs must use acid-resistant calcium phosphate cements.[6]
- Abandoned oil and gas wells that were not sealed to today's standards could provide an avenue for CO2 leakage.[7]
- A sudden and large release of CO2 would pose immediate dangers to human life and health, if there were exposure to concentrations of CO2 greater than 7-10% by volume of air.[8]
- Impacts of elevated CO2 concentrations in the shallow subsurface could include lethal effects on plants and subsoil animals and the contamination of groundwater.[9]
- Environmental impacts could be major if large brine volumes with mobilized toxic metals and organics migrated into potable groundwater.[10]

WHERE WOULD CO2 BE PUT?

Ideal Site - Porous briny sandstone that can absorb CO2:

"...storage in saline (brine, salty water) aquifers. These offer the greatest potential of any type of geological storage site in terms of volume. Injected to depths of over 800 meters, CO2 enters a liquid-like "supercritical" state allowing condensed storage. Naturally more buoyant than salt water, it must be kept down by thick layers of impermeable caprock above the storage formation. Over time it may dissolve and sink in the water, or partially react with rock and mineralize. Crude estimates show that globally saline aquifers could accommodate 50-200 times the amount of fossil fuel emissions predicted in the coming 50 years."[11]

"There could be a much larger potential for geologic storage in saline formations…technical storage capacity in coal beds is much smaller…"

The U.S. Department of Energy's List of Potential Locations[12]:

- **Oil and Gas Bearing Formations.** An oil or gas formation is a formation of porous rock that has held crude oil or natural gas (both of which are buoyant underground like CO2) over geologic timeframes. Advantage: 1. has a demonstrated seal, and 2. injected CO2 can enable the production of oil and gas resources.
- **Saline Formations.** A saline formation is a formation of porous rock that is overlain by one or more impermeable rock formations and thus has the potential to trap injected CO2. Advantage: 1. large aggregate CO2 storage capacity, and 2. low number of existing well penetrations compared to oil and gas formations.
- **Basalts**. Basalts are formations of solidified lava. They generally have low porosity; the CO2 storage mechanism of interest in a basalt formation is mineralization of CO2 with silicates.
- **Deep Coal Seams.** CO2 injected into a coal bed becomes absorbed onto the coal's surface and is sequestered. Most coals contain absorbed methane, but will preferentially absorb CO2.
- **Oil or Gas Rich Shales.** Shale, the most common type of sedimentary rock, is characterized by thin horizontal layers of rock with very low permeability in the vertical direction. Many shales contain 1-2% organic material, and the hydrocarbon material provides an adsorption mechanism for CO2 storage, similar to CO2 storage in coal seams.

WHAT STANDARDS WILL BE DEVELOPED?

1. Modeling
2. Monitoring
3. Mitigation
4. Verification
5. Reporting and recordkeeping
6. Bonding
7. Restoration of surface lands
8. Fees to pay for the program
9. Enforcement procedures

WHAT IS...
Modeling, Monitoring, Mitigation, and Verification (MM&V)?*

Monitoring and Verification are defined as the capability to measure the amount of CO2 stored at a specific sequestration site, monitor the site for leaks or other deterioration of storage integrity over time, and to verify that the CO2 is stored in a way that is permanent and not harmful to the host ecosystem.

- **Modeling**. Modeling is simulating the forces that influence the behavior of CO2 in a geologic formation. A model is an important tool needed to prove, with a high degree of confidence, that injected CO2 will remain securely stored before injection is allowed to commence. The behavior of injected CO2 is a complex phenomena. It involves the flow of CO2 through heterogeneous rock; forces acting upon the flowing CO2, including buoyancy, dissolution, capillary trapping, and chemical reactions; and the impact of the CO2 plume and increased pressure on the formation cap rock. A model serves as a nexus of understanding and captures the interaction of different forces. The boundary of a robust CO2 storage model is not limited to the target formation, but also includes paths that fugitive CO2 may travel up to the surface.
- **Plume tracking**. Plume tracking is the ability to "see" the injected CO2 and its behavior. Seismic is a key technology in this area. Supercritical CO2 is more compressible than saline water and sound waves travel through it at a different velocity. Thus free CO2 in a saline formation leaves a bright seismic signature, as seen at the Weyburn and Frio field tests. Observation wells are another important source of information for plume tracking.
- **Leak detection.** CO2 leak detection systems will serve as a backstop for modeling and plume tracking. The first challenge for leak detection is the need to cover large areas. The CO2 plume from an injection of 1 million tons of CO2 per year in a deep saline formation for twenty years could be spread over a horizontal area of 15 square miles or more. The second challenge is to separate CO2 leaks from varying fluxes of natural CO2 respiration.

There are important interconnections among these three areas. For example, data from plume tracking enables validation of reservoir models. On the other hand, a robust reservoir model enables operators to better interpret data from plume tracking. Also, models and plume tracking help focus leak detection efforts on high-risk areas.

Mitigation is the capability to respond to CO2 leakage or ecological damage in the unlikely event that it should occur. If CO2 leakage occurs, steps can be taken to arrest the flow of CO2 and mitigate the negative impacts. Examples include lowering the pressure within the CO2 storage formation to reduce the driving force for CO2 flow and possibly reverse faulting or fracturing; forming a "pressure plug" by increasing the pressure in the formation into which CO2 is leaking; intercepting the CO2 leakage path; or plugging the region where leakage is occurring with low permeability materials using, for example, "controlled mineral carbonation" or "controlled formation of biofilms."

* "Carbon Sequestration Technology Roadmap and Program Plan – 2006." U.S. Department of Energy, National Energy Technology Laboratory. 2006

[1] "Carbon Sequestration Technology Roadmap and Program Plan – 2006." U.S. Department of Energy, National Energy Technology Laboratory. 2006, page 21.
[2] Ibid, page 2.
[3] "IPCC Special Report on Carbon Dioxide Capture and Storage, Summary for Policy Makers," Intergovernmental Panel on Climate Change, 2005, p. 14.
[4] "Carbon Sequestration Technology Roadmap and Program Plan – 2006." page 5.
[5] "IPCC Special Report on Carbon Dioxide Capture and Storage", p. 13
[6] "Carbon Sequestration Technology Roadmap and Program Plan, 2006," pages 23 and 24.
[7] Ibid, p. 21.
[8] "IPCC Special Report on Carbon Dioxide Capture and Storage", p. 12
[9] Ibid, p. 13
[10] "Gas-water-rock interactions in Frio Formations following CO2 injection: Implications for the storage of greenhouse gases in sedimentary basins", *Geology*: Vol. 34, No. 7, pp. 577-580
[11] "Verification Yearbook 2003", Chapter II, Monitoring and verification of geological and ocean carbon dioxide disposal. Jason Anderson.
[12] "Carbon Sequestration Technology Roadmap and Program Plan, 2006," p. 24.

Pssst. Want to get rid of CO2? Try burying it.

By Eva Barkeman
November 8 2006: 2:56 PM EST

FORTUNE

(Fortune Magazine) -- Can a coal-fired power plant completely eliminate carbon-dioxide emissions? That's what Swedish energy company Vattenfall is hoping to prove with a pilot project under construction in Germany that promises to be the world's first emissions-free carbon power-generating plant.

The $62 million, 30-megawatt facility, scheduled to go into operation by mid-2008, makes use of oxyfuel technology, in which coal is burned in pure oxygen instead of air. That leaves the resulting emissions nitrogen-free and easier to clean and store. Once the plant in Schwarze Pumpe, south of Berlin, is fully operational, the plan is to compress the CO2 into liquid and inject it into porous rock about a kilometer below ground. Over time the carbon dioxide is expected to sink, dissolve in saline aquifers, and mineralize into carbonates. "In a thousand years, we can start selling Vattenfall marble," jokes company spokesman Staffan Görtz.

Of course, if the gas escapes to the surface, Vattenfall won't be selling marble futures; it will need to buy marble tombstones. "If the CO2 leaks out, the least problem would be further adding to the greenhouse effect," Görtz notes. "The key issue would be the risk of suffocating, since CO2 is heavier than air and will stay close to the ground."

Injecting CO2 deep underground is the most promising method of what is known as carbon sequestration. The technology is already being used by Shell and other oil companies to enhance production at offshore oil and gas fields.

Research into reducing CO2 emissions from burning coal is being carried out in many industrialized countries as a result of a growing awareness about global warming. In the two years it will take to build the Vattenfall plant, 50 billion tons of CO2 will be emitted worldwide. "Vattenfall's project is definitely on the cutting edge of carbon removal," says John Grasser, a U.S. Department of Energy spokesman. "There's less pollution using oxyfuel." Other methods of capturing CO2 include cleaning emissions after combustion and gasifying coal to get hydrogen for combustion.

"With regard to costs, oxyfuel is currently the most promising method for capturing carbon dioxide at our existing power plants," says Görtz. Even though the technology is expensive, he adds, the cost of generating power will be cheaper than it would be if Vattenfall paid for emitting CO2 under current European Union regulations-about 17 euros a ton.

Vattenfall CEO Lars Josefsson says his company, which is owned by the government of Sweden and emits 90 million tons of CO2 into the atmosphere each year, has a particular responsibility. "Climate change," he says, "is a reality we have to face." ■

From the October 30, 2006 issue

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WHERE PERSPECTIVES CONNECT

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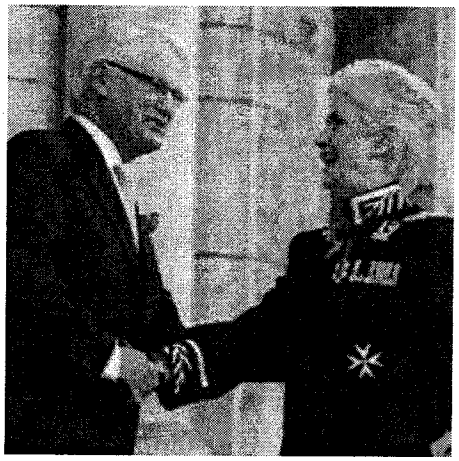
B.C. throne speech written in green ink

CanWest News Service; Victoria Times Colonist

Wednesday, February 14, 2007

VICTORIA - The B.C. government plans to reduce greenhouse gas emissions by at least 33 per cent by 2020 as part of a wide-ranging climate-change strategy announced in Tuesday's throne speech.



CREDIT: Canadian Press

Premier Gordon Campbell greets Lt.-Gov. Iona Campagnolo at the legislature as she arrives to deliver the throne speech.

Saying that voluntary action has failed, government also promised to set aggressive, but economically viable interim targets for 2012 and 2016.

"The government will act now and will act deliberately," the speech said.

The speech appeared to spell the death knell for coal-fired electricity projects by saying that, effective immediately, B.C. will become the first jurisdiction in North America to require 100 per cent carbon sequestration for any coal-fired project. "That means no greenhouse gas emissions will be permitted for coal-fired electricity projects anywhere in British Columbia," the speech said.

The government also promised:

- All electricity produced in B.C. will be required to have net zero greenhouse gas emissions by 2016;

- A new $25-million clean energy fund will be established to encourage green energy sources;

- Tailpipe emission standards for all new vehicles sold in B.C. will be phased in between 2009 and 2016 to cut carbon dioxide from cars by 30 per cent;

- Legislation will be developed to phase in new requirements for methane capture at landfills, which are responsible for about nine per cent of B.C.'s greenhouse gas emissions.

The speech revealed Premier Gordon Campbell will meet with the governors of Washington and California in the coming weeks to develop initiatives for reducing greenhouse gases on the Pacific coast.

Victoria Times Colonist

CLOSE WINDOW

Carbon Capture in Sight

March 28, 2007

American Electric Power says it is not waiting around for the feds to mandate carbon controls on all power plants. On its own accord, it is setting the process in motion to capture carbon dioxide emissions that are tied to climate change.

Ken Silverstein
EnergyBiz Insider
Editor-in-Chief

Advanced tests will begin at one of its power plants in West Virginia in 2008. Once those trials are deemed successful, the Columbus, Ohio-based utility will implement the technology at another facility in Oklahoma. By 2011, AEP says that the operation that uses chilled ammonia to scrub the carbon dioxide (CO_2) emissions can be ready for prime-time. Those releases would then be compressed and stored permanently underground or be used to help retrieve oil deposits.

Clearly, it's now possible to dramatically cut such pollutants as nitrogen oxide and sulfur dioxide. But, it's also becoming increasingly real to trap CO_2 in trees or bury it underground. By most accounts, energy usage will rise in the coming decades and coal will remain the primary fuel source to generate electricity. **Carbon sequestration therefore holds the key to future power plant production using fossil fuels.**

"With Congress expected to take action on greenhouse gas issues in climate legislation, it's time to advance this technology for commercial use," says Michael Morris, CEO of AEP, in a prepared statement.

Ever-escalating levels of CO_2 contribute to global warming that could cause rising sea levels, floods and extended heat waves. The matter is exacerbated because population around the globe will increase while developing countries are advancing and will use more coal -- all of which will push up the earth's temperature another 2-10 percent by the year 2100, says a United Nations panel.

A report published by the Massachusetts Institute of Technology acknowledges coal's prominence and therefore calls on government to provide incentives for utilities to invest in technologies to capture CO_2 emissions. Basically, the university advocates a carbon tax that would motivate companies to apply the latest and greatest technologies if they decide to build coal plants.

Without that, it fears a rush to build cheap generators that would have unbearable consequences. The U.S. government, in fact, is leading the charge when it comes to building FutureGen, a zero emissions power facility that costs $1 billion. It is expected to be online by 2012 and will have carbon capture technologies applied to it.

"There are a lot of good things happening in the power-

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from-coal arena that very few people know about yet," says Paul Grimmer, CEO of Eltron Research in Boulder, Colorado. He expects the first advanced coal generation to hit markets in five years. "The solutions AEP are pursuing for existing power plants are very good but the coming technologies will likely be even better."

Economic Opportunities

Power companies contribute 60 percent of all CO2 emissions in the United States. Older coal-fired facilities could be retrofitted so as to trap the CO2 before it leaves the smokestack. But such remedies are expensive and less efficient than building modern coal plants called integrated gasification combined cycle generators, commonly referred to as coal gasification.

Such plants scrub the mercury, nitrogen oxide and sulfur dioxide before they would separate the remaining byproducts: CO2, carbon monoxide and hydrogen, which could be used to power everything from cars to power plants. The largest demonstration projects are in Norway, where Statoil is placing 1 million tons of CO2 per year into a saline aquifer deep in the North Sea, and in Canada, where the CO2 is going into the Weyburn Oil field just north of the North Dakota border.

For its part, AEP says that it will follow a dual course of retrofitting older plants while also building modern facilities that have the potential to capture carbon emissions. Meantime, ConocoPhillips, General Electric and Shell Corp. are spending billions to develop not just coal gasification technologies but also the tools to bury CO2.

Canada, furthermore, is building a pipeline to transport carbon dioxide from Alberta's oil sands for sequestration. The chief executive of Alberta's biggest utility, TransAlta, is helping to head the project -- a direct implication of the emphasis now on Canadian oil sands. While that commodity has the potential to displace some Middle Eastern oil, it is also a major contributor to CO2 emissions.

Some environmental organizations bemoan any technologies that would encourage more coal use, with the Sierra Club calling the Canadian government's participation in the pipeline a "subsidy" for the fossil fuel industry. Many environmental groups, however, applaud the efforts to store carbon underground, noting that Asia, Latin America and parts of Africa are undergoing rapid expansion and their energy use will rise as a result.

In the case of Canada, the Natural Resources Defense Council there says that the country could store up to 9,000 megatonnes of CO2, which is 11 times the nation's current greenhouse gas emissions. By developing carbon capture tools, it says that Canada can help meet global energy demand while also earning a profit.

"By deploying carbon capture and storage technology on a wide scale domestically, Canada can demonstrate that this technology is effective in both cost and environmental terms," says the Natural Resources Defense Council. "As other nations develop their own fossil fuel resources, they can look to Canada for the technology to develop those resources in an environmentally responsible way."

All public and private initiatives to sequester CO2 emissions and minimize pollution show resolve. They are expensive undertakings. But, with energy production steadily rising, the endeavors are needed now more than ever.

Respond to the editor.

BBC NEWS

'Clean energy' power station move

The world's first industrial-scale clean energy power plant to generate "carbon-free" electricity from hydrogen could be built in Aberdeenshire.

The £330m project will split natural gas into hydrogen and carbon dioxide.

The hydrogen will fuel a new power station to be built near the existing power station at Peterhead.

The carbon dioxide (CO_2) will then be liquefied and piped underground for storage in BP's Miller oil field where it can also help to recover more oil.

Design work

Oil giant BP PLC and its partners Royal Dutch/Shell, ConocoPhillips and Scottish & Southern Energy PLC are planning to build the 350 megawatt power station, which could come on stream in 2009.

BP said the project would reduce the amount of carbon dioxide emitted to the atmosphere by the power generation by more than 90% and would provide carbon-free electricity to the equivalent of a quarter of a million UK homes.

Initial engineering feasibility studies into the project have been completed and the partners will now begin detailed design work to make sure the project is economically viable.

The carbon dioxide would be exported through existing pipelines to the Miller oilfield which is due to cease production in 2006/7.

The injection of carbon dioxide could increase oil recovery by up to 40 million barrels and extend the field's life by 15-20 years, BP said.

Norway's Statoil company has buried carbon dioxide under the North Sea since 1996.

> **Carbon capture can contribute significantly to reduction in green house gases**
> Alex Salmond
> SNP leader

The UK Government recently announced £25m of funding to develop carbon sequestration.

The Scottish National Party welcomed the announcement.

Party leader Alex Salmond, whose constituency includes Peterhead, said: "Carbon capture can contribute significantly to reduction in greenhouse gases. It is a life saving and potentially planet saving technology.

"Estimates suggest that 1.6 billion tonnes of CO_2 can be stored under the Scottish and Norwegian sectors of the North Sea.

"With total Scottish CO2 output of 50 million tonnes, carbon capture can play a big part in helping us meet the Kyoto targets and help in the battle to halt climate change."

Mr Salmond said that Scotland had the best locations in the world for carbon capture and storage with a developed pipeline network and oil reservoirs coming close to the end of natural production.

He urged the UK Government to put full support behind the scheme.

Deputy First Minister Nicol Stephen said: "This is an exciting development for Scotland and shows that we can lead the world in new technologies," he said.

"It also demonstrates that business partnerships can deliver solutions that not only bring significant carbon savings but global business opportunities."

Story from BBC NEWS:
http://news.bbc.co.uk/go/pr/fr/-/1/hi/scotland/4638409.stm

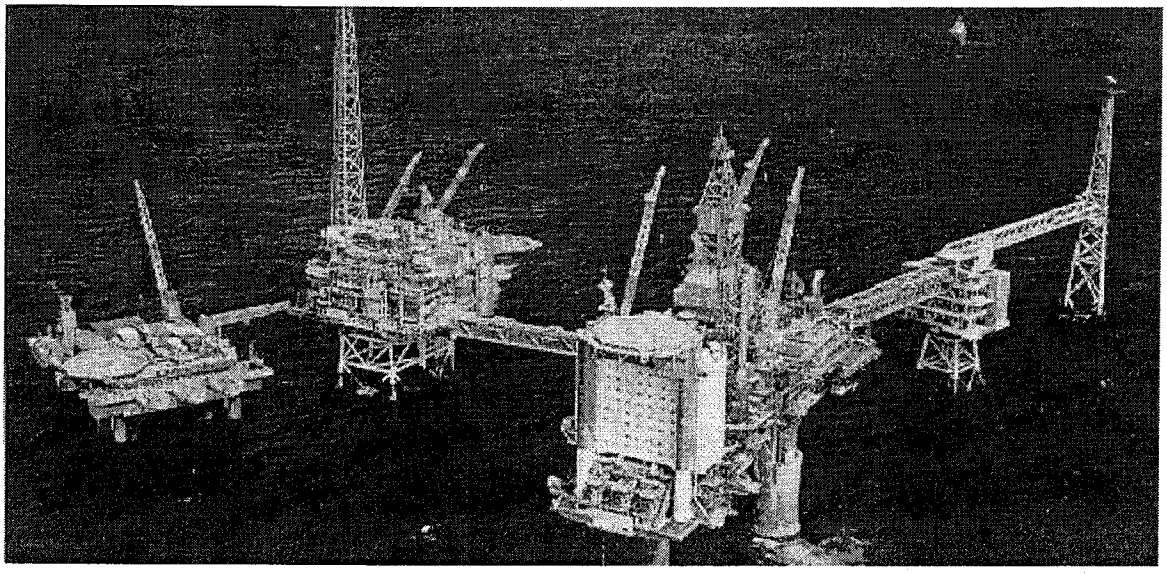
Published: 2005/06/30 15:48:34 GMT

Carbon Capture & Sequestration Technologies @ MIT

Technology Overview

Carbon sequestration is a way to reduce greenhouse gas emissions. It complements two other major approaches for greenhouse gas reduction, namely improving energy efficiency and increasing use of non-carbon energy sources. Interest has been increasing in the carbon sequestration option because it is very compatible with the large energy production and delivery infrastructure now in place. All three approaches will need to make significant contributions in order to meet the objective of the United Nations Framework Convention on Climate Change, that is the stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system.

There are two primary types of carbon sequestration. Our program focuses on carbon dioxide capture and storage, where carbon dioxide is captured at its source (e.g., power plants, industrial processes) and subsequently stored in non-atmospheric reservoirs (e.g., depleted oil and gas reservoirs, unmineable coal seams, deep saline formations, deep ocean). The other type of carbon sequestration focuses on enhancing natural processes to increase the removal of carbon from the atmosphere (e.g., forestation). A more detailed overview is contained in [Encyclopedia of Energy (2004)].



Sleipner CO2 Injection Project

The Sleipner project in Norway's North Sea is the world's first commercial carbon dioxide capture and storage project. Started in 1996, it sequesters about one million metric tons of carbon dioxide each year.

3-D Showed the Way

CO_2 Puts New Fizz in Old Field

By DIANE FREEMAN
EXPLORER Correspondent

New 3-D seismic data and the injection of CO_2 have given new life to a 100-year-old oil field in Wyoming.

Anadarko Petroleum increased production of the historic Salt Creek field with the use of new tools, new technological expertise and a new way of looking at old plays.

"You can still find oil in a 100-year-old field with some new technologies," said Brian P. Elias, staff geologist with Anadarko, as he described how CO_2 EOR extended the life of this century-old field.

"(And) it was also environmentally friendly.

"We expect to recover 10-15 percent more oil in place because of the injector," he added.

Elias described the project as one of several speakers during the recent one-day, 13th annual 3-D Seismic Symposium sponsored by the Rocky Mountain Association of Geologists and the Denver Geophysical Society.

A record number of 700 participants attended the conference this year, officials said.

Located in Wyoming's Natrona County, Salt Creek field lies just north of Casper and has a large CO_2 source byproduct of natural gas production at LaBarge.

"In 2006 it was averaging 60 million cubic feet a day," Elias said. The field now has 1.6 to 1.7 billion barrels of oil in place.

Revealing the Unknown

Salt Creek Field was started in the late 1800s by seeps, Elias explained, with the first well drilled there in 1908. At its peak production period in the 1920s Salt Creek field produced 100,000 barrels of oil a day

Anadarko acquired the field in 2002, and the first CO_2 injector was performed in 2004.

"The 3-D data set was acquired in 2005," he said. "One of the challenges was that it requires the right kind of reservoir rock ... We see added value to shooting 3-D to this play."

The high-resolution, 53-mile 3-D survey that was acquired took 30 days to complete.

"This 3-D was specifically designed to image the Second Wall Creek sand, which is the main producing interval within the field," Elias said.

Design parameters yielded outstanding imaging of reflectors from as shallow as 100 meters, down to basement at over 3,000 meters.

The results from the data revealed previously unseen faulting and fracturing geometries within the shallow horizons. It also disclosed deeper structures in the granitic basements, he said.

"An east-west line across the middle of the field clearly shows that Salt Creek field is a classic basement involved thrust fault generated fold," he said.

Also, amplitude anomalies were observed on flattened time slices at the Second Wall Creek interval corresponding directly to injector-producer patterns with CO_2 flood areas initiated prior to seismic acquisition, he said.

With the injection of CO_2, it can produce more than 20,000 barrels a day, he said. That marked an increase from just 3,000 barrels a day previously, he said.

"We want to see an old field through new eyes," Elias said. "That's why we did the 3-D.

"It helped us to better understand the fluid flow pathway," he added. "With a better designed injector it produced a pattern."

Increased Production

After the CO_2 was injected, there was a substantial increase in production.

"It was a 10-20 percent relative amplitude due to the increase in pressure," he said.

"It helped us to better understand the structural complexity. We've seen a 4,500 bopd to date," Elias said.

"This large north-south trending asymmetric anticline has the distinction of being the largest oil field in the state with cumulative reserves of 700 mmbo," he said.

Anadarko acquired the field through the acquisition of Howell Petroleum in 2003 for the purpose of increasing reserves through CO_2 injection. The company then built a 125-mile pipeline from Lost Soldier Field interconnect to access CO_2 sourced at the Exxon-operated Shute Creek Plant in Lincoln County, he said.

Injection began in January 2004. So far, two of 12 proposed incremental phases of development have been completed.

Production is now in excess of 7,000 bopd with over half attributed to CO_2 enhanced recovery, he noted.

He pointed out that maximum daily production is projected to reach 20-25 mbopd in 2020 with addition EOR reserves estimated at 200 mmbo.

Also, Anadarko expects to sequester about 490 bcf of CO_2 by the end of the project, he said.

Detailed mapping of shallow fault

Corrected
SESSION OF 2007

SUPPLEMENTAL NOTE ON HOUSE BILL NO. 2419

As Amended by House Committee on Energy and Utilities

Brief*

HB 2419, as amended, would create the Carbon Dioxide Reduction Act. The Act would provide incentives for the sequestration of carbon dioxide through underground storage. The Act also would provide for regulation of underground carbon dioxide facilities.

The Kansas Corporation Commission (KCC) would be responsible for administering the regulatory aspects of the Act. On or before July 2008, the KCC would be required to establish in rules and regulation requirements, procedures and standards for the safe and secure injection and maintenance of underground storage of carbon dioxide. In addition, the KCC would be authorized to develop rules and regulations establishing fees for permitting, monitoring and inspecting carbon dioxide injector wells and underground storage. Rules and regulation authorized by the Act would apply to existing underground carbon storage in addition to wells that may be established in the future.

Under the bill, fees collected would be remitted to the Carbon Dioxide and Underground Storage Fund. The KCC would be authorized to enter property or facilities to prevent the escape of carbon dioxide into the atmosphere or prevention of pollution of soils and water of the state. The penalty for violation of the Carbon Dioxide Reduction Act would be $10,000 per violation per day.

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*Supplemental notes are prepared by the Legislative Research Department and do not express legislative intent. The supplemental note and fiscal note for this bill may be accessed on the Internet at http://www.kslegislature.org

The bill would provide incentives by allowing any carbon dioxide capture, sequestration and utilization property and any electric generation unit which captures and sequesters all carbon dioxide and other emissions to be exempt from all property taxes for a period of five taxable years following completion of construction or installation of the property. Carbon dioxide capture, sequestration or utilization property is defined in the bill as machinery, or equipment used to capture carbon dioxide or to convert carbon dioxide into one or more products; carbon dioxide injection wells; and machinery and equipment used to recover carbon dioxide from sequestration. The bill would provide for accelerated depreciation of carbon dioxide capture, sequestration or utilization machinery and equipment. Such equipment, located in Kansas, would be depreciated for income tax purposes over a 10 year period (55 percent the first year and 5 percent each of the subsequent nine years). The exemption and the deduction would be available beginning with tax year 2008.

Background

HB 2419 was introduced by the House Committee on Energy and Utilities. Representatives from the National Institute for Strategic Technology Acquisition and Commercialization (NISTAC), Sunflower Electric Power Corporation, and the Kansas Chapter of the Sierra Club presented testimony in support of the bill at the House Committee hearing. Written testimony in support of HB 2419 was submitted by a representative of the Association of Ethanol Producers. Representatives from the KCC and Westar testified as neutral conferees.

The House Committee amended the bill by changing the date by which the Kansas Corporation Commission would have to establish rules and regulations from January 1, 2008, to July 1, 2008. The Committee also amended the bill to allow the tax incentives for equipment used to convert carbon dioxide into products, for carbon dioxide utilization equipment used to recover carbon dioxide from sequestration, and certain electric

generation units. Finally, the Committee amended the bill to provide that defined carbon dioxide capture sequestration or utilization to include any equipment and machinery which is located in the State of Kansas and is used to capture carbon dioxide from industrial and anthropogenic sources or to convert carbon dioxide into one or more products and used to inject carbon dioxide into carbon injection wells or used to recover carbon dioxide from sequestration.

The Division of the Budget's fiscal note on HB 2419 states that the bill would reduce State General Fund revenues, reduce the receipts to two state building funds, and increase state aid to school districts beginning in FY 2011.

The new income tax deduction would result in reductions to the State General Fund from FY 2011 through 2013. Beginning in FY 2014, the deduction is expected to increase State General Fund revenues. The effect on the State General Fund (SGF) is estimated to be:

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
SGF	($150,000)	($150,000)	($150,000)	$40,000	$70,000

The bill would decrease property tax revenues by creating a tax exemption. Two state building funds would be directly impacted by enactment of bill: the Educational Building Fund (EBF) and the State Institutions Building Fund (SIBF). The Department of Revenue estimates the following impact by fiscal year beginning in FY 2011:

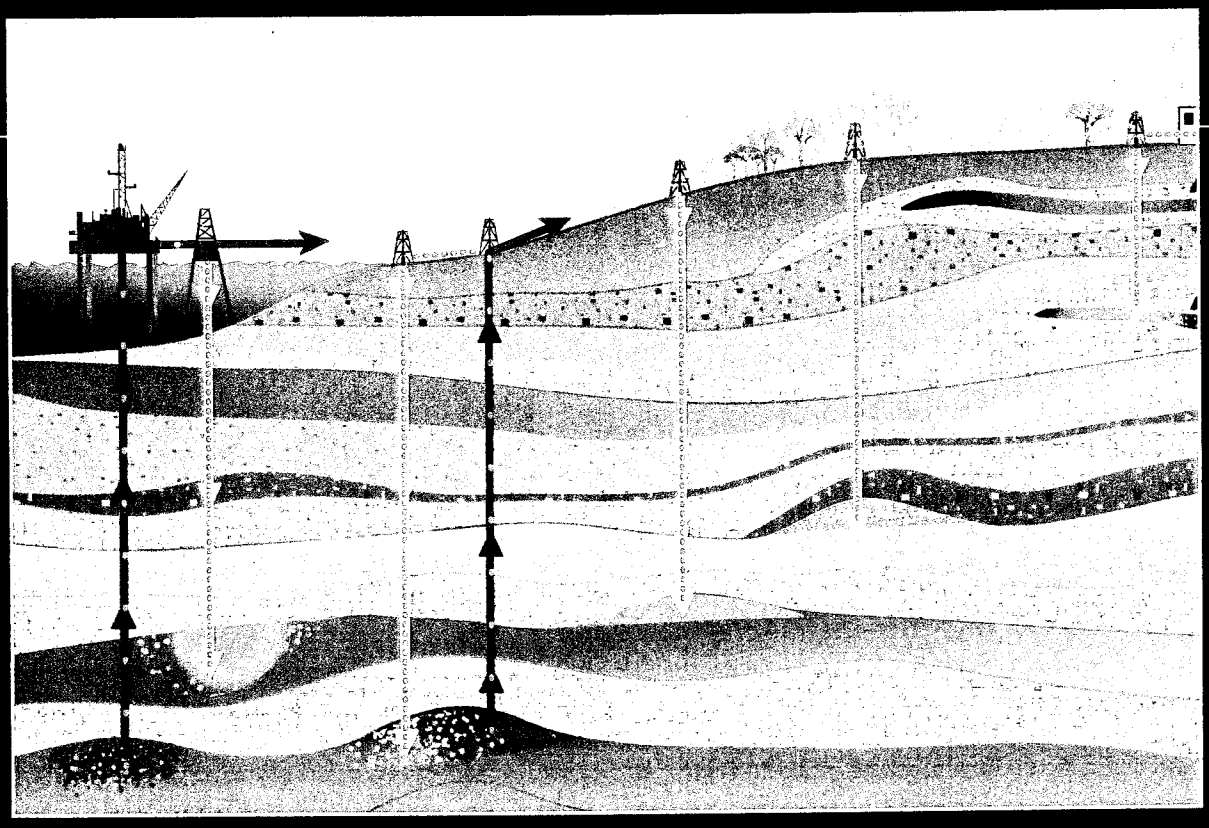
	FY 2011	FY 2012	FY 2013
EBF	($6,670)	($6,670)	($6,670)
SIBF	($3,330)	($3,330)	($3,330)
Total	($10,000)	($10,000)	($10,000)

Additionally, the fiscal note states that the bill would impact state expenditures for aid to school districts. To the extent that school districts receive less property tax revenue through the state's uniform mill levy as a result of the property tax deduction, the state would provide more state aid through the school finance formula. The Department of Revenue estimates the increased state expenditures for aid to schools as follows:

	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015
School Aid	$90,000	$80,000	$70,000	$60,000	$60,000

The KCC would be authorized assess fees to support its regulatory responsibilities under the bill. Any fiscal effect associated with the passage of HB 2419 is not reflected in *The FY 2008 Governor's Budget Report.*

CARBON DIOXIDE CAPTURE AND STORAGE



WMO

Intergovernmental Panel on Climate Change

UNEP

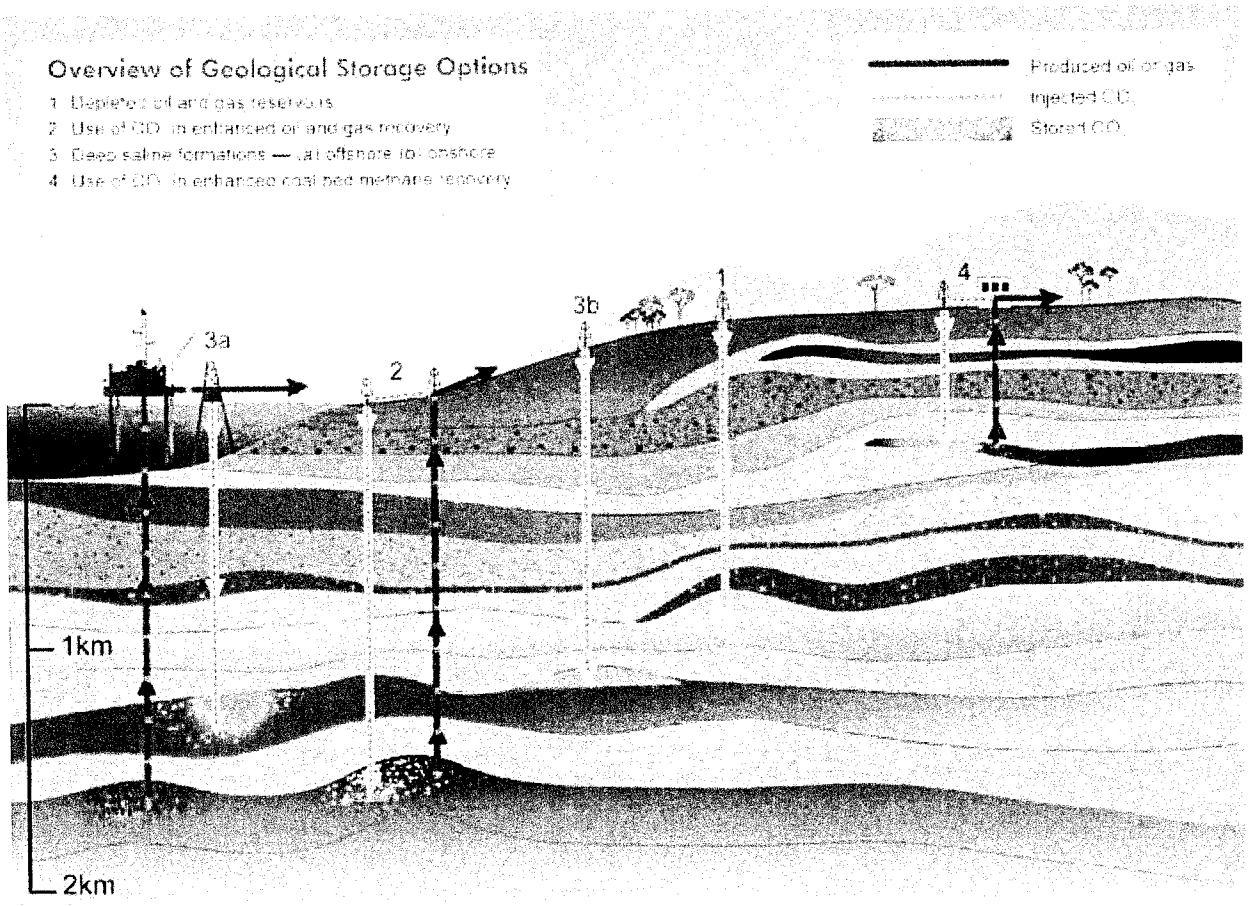


Figure SPM.4. Overview of geological storage options (based on Figure 5.3) (Courtesy CO2CRC).

resistant material. Shipping of CO_2, analogous to shipping of liquefied petroleum gases, is economically feasible under specific conditions but is currently carried out on a small scale due to limited demand. CO_2 can also be carried by rail and road tankers, but it is unlikely that these could be attractive options for large-scale CO_2 transportation (Sections 4.2.1, 4.2.2, 4.3.2, Figure 4.5, 4.6).

7. *Storage of CO_2 in deep, onshore or offshore geological formations uses many of the same technologies that have been developed by the oil and gas industry and has been proven to be economically feasible under specific conditions for oil and gas fields and saline formations, but not yet for storage in unminable coal beds[8] (see Figure SPM.4).*

If CO_2 is injected into suitable saline formations or oil or gas fields, at depths below 800 m[9], various physical and geochemical trapping mechanisms would prevent it from migrating to the surface. In general, an essential physical trapping mechanism is the presence of a caprock[10]. Coal bed storage may take place at shallower depths and relies on the adsorption of CO_2 on the coal, but the technical feasibility largely depends on the permeability of the coal bed. The combination of CO_2 storage with Enhanced Oil Recovery (EOR[11]) or, potentially, Enhanced Coal Bed Methane recovery (ECBM) could lead to additional revenues from the oil or gas recovery. Well-drilling technology, injection technology, computer simulation of storage reservoir performance and monitoring methods from existing applications are being

[8] A coal bed that is unlikely to ever be mined – because it is too deep or too thin – may be potentially used for CO_2 storage. If subsequently mined, the stored CO_2 would be released. Enhanced Coal Bed Methane (ECBM) recovery could potentially increase methane production from coals while simultaneously storing CO_2. The produced methane would be used and not released to the atmosphere (Section 5.3.4).

[9] At depths below 800–1,000 m, CO_2 becomes supercritical and has a liquid-like density (about 500–800 kg m^{-3}) that provides the potential for efficient utilization of underground storage space and improves storage security (Section 5.1.1).

[10] Rock of very low permeability that acts as an upper seal to prevent fluid flow out of a reservoir.

[11] For the purposes of this report, EOR means CO_2-driven Enhanced Oil Recovery.